ATOMIC ENERGY newsletter®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

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Dear Sir:

Corwith Corporation is new subsidiary of Crane Co., Chicago 5, Ill., which will take over government research and development work formerly handled by Crane's engineering division. The work includes Crane's contract with the USAEC to produce yttrium metal; the subsidiary is already turning out hafnium ingot and sheet, for use at Knolls Atomic Power Laboratory. President of the subsidiary is Maurice Nelles, Crane Co's vice president for engineering..... New venture in the nuclear field is General Radionuclear Co., Milford, Conn., headed by Jerome Saldick. Dr. Saldick was formerly with Astra, Inc. ..... In Israel the Israel Nuclear Engineering Co., Ltd., has been formed in Tel Aviv by J. Weiss and E. Racine of the Israel Fuel Corp., and M. Fradis of the American-Israeli Gas Corp. (Other BUSINESS NEWS, p. 2 this LETTER.)

Some 83 patented inventions in the nuclear field developed in the course of USAEC-sponsored research, and owned by the U. S. government have been made available to U. S. industrial firms on a royalty-free (but non-exclusive) basis. A total of 1,531 such patented inventions are now released for licensing; details may be obtained from Patent Branch, USAEC, Wash. 25, D. C. (Other PATENT & TRADE-MARK NEWS, p. 5 this LETTER.)

To stimulate business interest in phases of nuclear work, New York State's Commerce Dep't. has now issued a booklet "Atomic Energy for Small Businesses". The booklet may be obtained free from the Dep't. at 112 State St., Albany, N.Y. (Other BOOKS, PUBLICATIONS, p. 5 this LETTER.)

Large increase in uranium exports by Canada for first seven months of 1958, as compared with like period of 1957, has brought total mineral exports for 1958 for that country 3% higher than for 1957. For the 1958 seven month period uranium exports were valued at $139,594,046 as compared with $55,520,646 for the comparable 1957 period. Uranium is now second only to nickel ($153,679,184 being 7-month 1958 export value) in dollar export value. (Other PRODUCT NEWS, p. 4 this LETTER.)

Closing session of the General Conference of the International Atomic Energy Agency last fortnight in Vienna saw new administrative budget of $5,225,000 voted for 1959 while a target for its general fund of $1,500,000 was established. The administrative budget is based on assessed contributions by the 69 member nations, with the general fund, for additional programs, obtained from voluntary contributions. The two week Conference also approved agency participation in the U.N.'s expanded program of technical assistance, and set up a program for training, research and applications of radioisotopes. (Robert McKinney resigned as permanent U. S. representative to the IAEA; his successor has not yet been named. Lack of concrete achievements in its first year has brought some criticism of IAEA by its member countries, and expanded administrative budget, some $1,760,000 higher for 1959 than was allocated in 1958, is being watched with interest for higher productivity.) (Other MEETINGS, COURSES, CONFERENCE, p. 5 this LETTER.)

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ATOMIC ENERGY BUSINESS NEWS...

NEW APPROACHES TO NUCLEAR POWER PRODUCTION STUDIED:- Two radically new approaches to the problems of high nuclear fuel, equipment and design costs, being investigated by Babcock & Wilcox Co. at its Lynchburg, Va., laboratories, were disclosed by the company last fortnight. One research project was the subject of a proposal made in August by B&W to the USAEC for financial assistance; this was study of a gas-suspension reactor coolant. The new concept involves the use of fine particles of solids, usually graphite, suspended in a gas such as carbon dioxide, nitrogen or helium, to produce a new high temperature reactor coolant. B&W states that its use points the way to economic nuclear power through "remarkable" reductions in both size and capital cost of major components of nuclear steam generating systems. Another concept introduces the use of mixed light and heavy water (water of variable density) to control pressurized and boiling water reactors. Such a system would replace the costly and intricate control rod systems now widely employed. In addition, the company estimates that this new control method will "more than double" the useful life of a water reactor core and increase the efficiency of fuel consumption up to 30%. This will also reduce equipment costs, since it will be possible to extract up to 75% more heat from a core of a given size.

NUCLEAR POWERED SUBMARINE TANKER BEING STUDIED:- Studies made for the Maritime Administration by General Dynamics Corp.'s Electric Boat Division on optimum size and speed of nuclear powered submarine tankers with a deadweight cargo capacity of from 20,000 to 40,000 tons and speed of 20 knots and up, were discussed recently by C. G. Morse, Maritime Administrator, in making progress report on the Electric Boat investigations. Mr. Morse noted that at 20 knots power requirements of submarine tanker are the same as surface ship; higher speeds of 35 to 40 knots favor the submarine. Submarine tankers are also safer than surface ships during wartime, he noted. Considering costs, Mr. Morse said that cost of 40-knot submarine tanker is less than that of comparable surface ship, but still too high to make its operation profitable.

WORK STARTS ON RADIOACTIVE WASTE FACILITY:- Fluor Corp., Ltd., started construction work last week on the USAEC's pilot plant for calcining high-level radioactive liquid waste products at its national reactor testing station, Idaho Falls, Idaho. Fluor's basic contract has been amended to provide $3,391,700 for construction of the plant, total cost of which is estimated at $6 million. The facility is designed to reduce the volume of high-level liquid radioactive waste products to about one-seventh their present bulk. Fluor will construct a waste treatment plant and a concrete storage vault for storing solid plant wastes. Completion of construction is scheduled for January 1960.

FINAL ENGINEERING DESIGN OF NEW HANFORD REACTOR ASSIGNED:- Final engineering design of a large scale nuclear reactor to be built at Hanford Works, Richland, Wash., has been assigned by the USAEC to General Electric Co., operator of the Hanford complex. The reactor, for production of special nuclear materials with design features for conversion to enable power take-off, is estimated to cost some $145 million, of which $45 million has been authorized for this fiscal year for initial work. Design engineering and construction will continue over a four-year period with actual initial construction work not scheduled to begin before next Spring.

ATOMIC ENERGY FINANCIAL NEWS...

NUCLEAR STOCKS REGISTER GAINS:- Stocks of companies in nuclear field were among those showing gains last fortnight as the U. S. exchanges continued to exhibit a continuously rising but selective pattern of stock prices. At all time highs were High Voltage Engineering Corp., up 15 points from its low this year, with Nuclear-Chicago up 21 points. While such metal issues as Brush Beryllium Co. showed strength, primary producers of uranium, both in the U. S. and Canada found no large interest in their shares. Reflecting this general disinterest was Northspan Uranium, holder of largest ($275,000,000) purchase contract from the Canadian government; this issue lost fractions, despite company's large milling capacity and its dominant position as one of the Rio Tinto holdings.

BETTER EARNINGS SHOWN BY METALS FIRM:- Earnings for 1958 of Lithium Corp. of America are almost 60% ahead of 1957, according to Herbert W. Rogers, president of the firm. Mr. Rogers said the company will pay a 4% stock dividend on December 1, 1958 to stockholders of record November 5, 1958.

ATOMIC ENERGY CONTRACT NEWS...

BIDS ASKED:- Proposals have been asked by the USAEC's New York operations office for performance of research and development work and conceptual design of a fast breeder nuclear reactor using a plutonium oxide--uranium oxide fuel cycle. Preliminary research at the General Electric-operated Knolls Atomic Power Laboratory, Schenectady, has indicated that economic nuclear power can be obtained from fast breeder reactors with long-lived oxide fuel elements and low-cost fuel fabrication and reprocessing methods. Deadline for proposals is November 3rd, 1958; further details may be obtained from the USAEC, 70 Columbus Ave., New York 23, N.Y.

Proposals for design, development, fabrication, installation and test operation of a factory-assembled, modular nuclear power plant have been asked by the USAEC's New York office jointly with the U.S. Air Force. The plant is to have a pressurized water reactor, cooled and moderated by light water, and using enriched uranium as fuel. It will produce 1000 kw of electricity and approximately 2000 kw of heat for military barracks, etc. Installation will be at a U. S. base of the Air Force. (Forerunner of this type plant, the Army's "package" power reactor, has been operating at Fort Belvoir, Va., since April, 1957. It is a type of fixed power plant using air-transportable components. The new plant is to use factory-assembled modules which may be air-transported to a site and rapidly assembled, as well as enabling its disassembly and relocation. Information on the project may be obtained from the USAEC, 70 Columbus Ave., New York 23, N.Y.; deadline for submitting proposals is December 1, 1958.

Industry and educational institutions have been invited by the USAEC to submit proposals for performance of test irradiation services (in nuclear reactors) of reactor materials, components and fuel elements. The irradiation services to be furnished will be needed for at least 5-years by the USAEC, for its testing program now planned, and it expects "significant increases in demand" by U. S. industrial companies and other government agencies for space in test reactors over the next few years. Proposals to be submitted should therefore take into account private firms that are to be accommodated, in addition to the government use. Details of the proposal, deadline on which is January 12, 1959, may be obtained from USAEC's division of reactor development, Wash. 25, D. C.

In expansion of its program to develop new uses for radioisotopes, the USAEC is inviting proposals from industrial organizations and research laboratories for isotope development projects of general benefit to the national economy and welfare. Proposals may be made from now to June 30, 1959. Budget of $3,650,000 has been set up by the Commission for new proposals submitted to that date. Details may be obtained from the USAEC's Office of Industrial Development, Wash. 25, D. C. (Previous contracts under this radioisotope development work have been awarded Tracerlab, Inc., ($49,000); Battelle Memorial Institute ($33,000); Nuclear Science & Engineering Corp. ($22,500); National Industrial Conference Board ($30,000); Emerson Radio & Phonograph Corp., with others, ($86,847); Atomics International ($76,000); Curtiss-Wright Corp. ($1,605,000); General Atomics ($61,000); Armour Research Foundation ($53,000); Radiation Applications ($32,300); Stanford Research Institute ($60,000); W. H. Johnson Associates ($89,000).

CONTRACTS AWARDED:- Contract to furnish a 15,000 kw boiling water reactor for the first nuclear power station in W. Germany has been awarded General Electric Co.'s atomic power equipment department, San Jose, Calif. Contract was signed with Allgemeine Elektrizitats-Gesellschaft, the large electrical manufacturer which will be prime contractor for construction of the $10 million power station. Plant is for Rheinisch-Westfaelisches Elektrizitatswerk, at Kahl, near Frankfurt, where construction has already begun. The reactor GE will furnish will use low-enrichment uranium oxide fuel; steam will be produced at the rate of 232,000 pounds per hour at a pressure of 650 lbs. sq. in. (General Electric had also been selected last fortnight over eight other proposals from four countries to design and build a 150,000 kw nuclear power plant for Societa Elettronucleare Nazionale (SENN) of Italy. Selection of GE's dual cycle boiling water reactor was made in part by a seven man team sponsored by the Italian government and the World Bank, which is financing 30% of the plant's equipment cost. The reactor was chosen in competition with natural uranium, gas-cooled reactors and pressurized water reactors. Prime contractor for the job will be International General Electric, which handles GE work overseas. Ebasco Services, Inc., will do design engineering, with reactor design and fabrication by GE at its San Jose, Calif., facilities.

NEW PRODUCTS, PROCESSES, INSTRUMENTS...for nuclear lab & plant...

NEW PRODUCTS FROM MANUFACTURERS:- Scintillation probe, Model DS8, provides detection of fast or slow neutrons, gamma and beta radiation. Using a new 10-stage, 5/4" photomultiplier tube and a transistorized electronic circuit, the basic detector weighs less than 5-oz., and is 1-in. in diameter. It is said to be completely water tight and corrosion proof. A variety of accessories for various applications are offered. -- Nuclear-Chicago Corp., 225 W. Erie St., Chicago 10, Ill.

Continuous level gauge, Model 40104, gives continuous depth or volume readings of liquid levels in totally enclosed containers. Instrument operation is based on variations of radiation received from a tank float. --Radiation Counter Laboratories, Inc., Skokie, Ill.

PRODUCT NEWS:- Uranium enriched to more than 99.97% in the uranium-238 isotope is now being offered for sale by the USAEC's Oak Ridge National Laboratory. This material, not available from any commercial source, has been enriched by the electromagnetic process at ORNL, and will be sold in three forms: (1) As the oxide, it will be sold at $15.25 per gram of uranium; (2) in 1/8-inch diameter cast rod it will be sold at $16.50 per gram of uranium; (3) and as metal foil it will be sold at $16.75 per gram of uranium. Transportation and standard handling charge of $14.00 per shipment are extra.

First group of 10 in a series of 15 uranium isotopic standards for use by research and educational institutions and industry in the U. S. and abroad are now available from National Bureau of Standards, Wash. 25, D. C. The additional five, as well as standards for other materials such as uranium and thorium, are in process of preparation. The first 10 standards (produced by a cooperative USAEC-NBS effort), are at levels (weight per cent uranium-235) of 0.5;1;1.5;2:3;5;20;85;90 and 93. The 5 to be available later will be at levels of 15;35;75 and 80. A natural uranium chemical standard rounds out the uranium series. Each isotopic standard issue unit consists of a quantity of uranium oxide equivalent to one gram of uranium. The chemical standard issue unit is 25 grams of uranium oxide. Charges vary from about $18 to about $40 per issue unit depending on the enrichment level. Domestic orders are being filled by the Bureau of Standards; foreign orders by USAEC's division of international affairs, Wash. 25, D. C.

"Regulations to Protect Against Accidental Conditions of Criticality in the Shipment of Special Nuclear Material", to become effective November 3, 1957, impose limits by the USAEC on the amount of special nuclear material (U-233, U-235, and plutonium) that licensees may carry in their own vehicles or deliver to unlicensed carriers for shipment. In their own vehicles, licensees may carry shipments up to 350 grams of contained U-235; 200 grams of U-233; and 200 grams of plutonium. For delivery to an outside carrier, limits are 100 grams of U-235; 60 grams of U-233; and 60 grams of plutonium.

MANUFACTURERS' LITERATURE:- New eight page brochure of Sylvania-Corning Nculear Corp., Bayside, L.I., N.Y. outlines the scope of the company's Bayside Laboratory fuel element development, consumable arc melting techniques, non-destructive testing, analytical chemistry, metal fabrication development, and other work. Listing is also given of several fuel element production contracts held by the firm.

Data sheets are available from Monsanto Chemical Co., St. Louis 4, Mo., showing physical properties of nine organic fluids, polyphenyl compounds and their alkyl derivatives, which show high resistance to radiation and thermal damage. The fluids are being evaluated as coolants for nuclear power plants and as radiation-resistant impregnants for capacitors.

New four page technical data sheet giving physical and chemical properties and application information on nuclear Grade R and commercial Grade C zirconium hydride is available from Metal Hydrides, Inc., Congress St., Beverly, Mass. The company points out that its hafnium-free Grade R is used as a moderator in nuclear reactors and, added to construction materials, can also be used for shielding components. Its Grade C is for general commercial applications.

Folder describing its carbon-14 breath analysis service may be obtained from New England Nuclear Corp., 575 Albany St., Boston 18, Mass., or from any of the offices of Atomic Associates, Inc., the company's sales representatives.

"How We Package Nuclear Power" is feature article in the Alco Review, issue of Summer-Fall, 1958, published by Alco Products, Inc., Schenectady 5, N.Y. In it, an Alco engineer describes the company's design for a 2000 kw portable, skid-mounted nuclear power plant, based on the reactor system in the Alco-built U. S. Army plant.

ATOMIC ENERGY PATENT DIGEST...latest patent & trade-mark grants...

ISSUED September 30, 1958 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:- (1) Apparatus for the selective detection of neutrons. A. H. Youmans, inventor. No. 2,854,584 assigned to Well Surveys, Inc., Tulsa, Okla.

ISSUED September 30, 1958 to GOVERNMENTAL ORGANIZATIONS:- (1) Electrolytic reduction of nitric acid solutions containing radioactive waste. H. W. Alter, inventor. No. 2,854,315 assigned to USAEC. (2) Cold traps. W. I. Thompson, inventor. No. 2,853,859 assigned to USAEC.

ISSUED October 7, 1958 to PRIVATE ORGANIZATIONS:- (1) Irradiation treatment of polyethylene. W. C. Rainer, E. M. Redding, J. J. Hitov, A. W. Sloan, W. D. Stewart, inventors. No. 2,855,517 assigned to W. R. Grace & Co., Cambridge, Mass. (2) Radiation detector. H. F. Stoddart, J. B. Williams, inventors. No. 2,855,520 assigned to Baird-Atomic, Inc., Cambridge, Mass.

ISSUED October 7, 1958 to GOVERNMENTAL ORGANIZATIONS:- (1) Casting method and apparatus. C. F. Gray, R. H. Thompson, inventors. No. 2,854,713 assigned to USAEC. (2) Copper coated uranium article. A. G. Gray, inventor. No. 2,854,737 assigned to USAEC. (3) Nickel coated uranium article. A. G. Gray, inventor. No. 2,854,738 assigned to USAEC. (4) Loading device. L. A. Ohlinger, inventor. No. 2,855,114 assigned to USAEC. (5) Separation of plutonium from uranium and fission products. G. E. Boyd, A. W. Adamson, J. Schubert, inventors. No. 2,855,269 assigned to USAEC. (6) Process of recovering uranium. J. M. Carter, C. E. Larson, inventors. No. 2,855,270 assigned to USAEC. (7) Separation of uranium hexafluoride from organic fluoro compounds. W. F. Libby, inventor. No. 2,855,271 assigned to USAEC. (8) Apparatus for condensation and sublimation. R. J. Schmidt, F. Fuis, inventors. No. 2,855,281 assigned to USAEC. (9) Nuclear reactors. H. L. Anderson, inventor. No. 2,855,354 assigned to USAEC. (10) Jacketed uranium slug. L. A. Ohlinger, C. M. Cooper, inventors. No. 2,855,355 assigned to USAEC. (11) Tamperproof film badge. L. F. Kocher, inventor. No. 2,855,519 assigned to USAEC.

NOTES:- Trade-mark registrations 668,152 for name Gammagage, and 668,153 for name Betameter have been issued Canadian Curtiss-Wright, Ltd., Oakville, Ontario, Marks are used by the firm to describe its radioactive thickness gauges.

NEW BOOKS & OTHER PUBLICATIONS...

The Practice of Nuclear Medicine, by Wm. H. Blahd, Franz K. Bauer, and Benedict Cassen, all of Los Angeles. In non-mathematical terms, the authors describe the physical principles involved in using nuclear materials and devices and relate them to practical medical problems. A section on instrumentation and laboratory design is included for the physician who may wish to equip his own nuclear medical laboratory. --Charles C. Thomas, Springfield, Ill.

Productive Uses of Nuclear Energy-Nuclear Energy & World Fuel Prices, by C. J. Dwyer. Discussion of nuclear energy as it may or may not be economic as compared with energy generated by fossile fuels. --National Planning Association, 1606 N. H. Ave., N. W., Wash., D.C. ($1.25)

Proceedings of the ANP Spectroscopy Information Meeting, Aug. 6-7, 1957, Wright Air Development Center. A one volume compilation of information submitted at the aircraft nuclear propulsion meeting on spectroscopy at Wright-Patterson; from the ANP Advisory Committee for Nuclear Measurements & Standards. No. PB-131773. --Office of Technical Services, Wash. 25, D. C. ($3.50)

Isotopes: Bibliography of U. S. Research & Application, 1955-57. Some 6000 references to materials appearing in scientific, technical and professional journals for the three years ending Dec. 1957. No. TID-3076. --Office of Technical Services, Wash. 25, D.C. ($2.25)

MEETINGS, COURSES, CONFERENCES...

Nuclear Congress, scheduled for April 5-10, 1959, Cleveland, Ohio, will include Nuclear Engineering & Science Conference, sponsored by more than 30 engineering and scientific societies; the Atomic Energy Management Conference; the Hot Laboratories and Equipment Conference; and the Atomfair. Full information is available from T. A. Marshall, Jr., Congress manager, Engineer's Joint Council, 29 West 39th St., New York 18, N.Y.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

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